

The Growth of Renewable Energy Being Used for Electricity Generation: the State-by-State Numbers may Surprise you

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Fossil fuels are still responsible for about 60% of electricity generation in the US, with natural gas representing more than 2/3 of that. But the percentage from renewable energy has continued to climb and now represents more than 20%.

The amount of renewable energy varies dramatically on a state-by-state basis. And some states leverage renewable energy for a lot more than 20%.

One might expect that, because of the politics associated with climate change, “Blue states” (those that vote predominantly for Democrats) are much further along than “Red” states (those that vote predominately for Republicans) in the march towards the energy transition as it relates to energy generation.

But surprisingly, that is not the case.

Below is a list of all states that had at least 25% of their electricity generated from renewable sources in 2023. Of the top 10, 5 are Red states: South Dakota (#2 on the list), Iowa (#3), Idaho (#5), Kansas (#9), and Oklahoma (#10). “Gray” state New Mexico is #7.

Of the 12 additional states included in the list, 5 are Red states: Montana, North Dakota, Nebraska, Texas, and Wyoming; while 1 – Nevada – is a gray state¹.

So Red states are as far along on the move to renewable energy for power generation as Blue states – if not more so.

Source of 2023 Power Generation by State: Top States Leveraging Renewables

State	Total GWh	% from coal	% from natural gas	% from nuclear	% from hydro	% from solar	% from wind	% Renewable
Vermont	166	0.0	0.0	0.0	54.2	13.3	21.1	88.6
South Dakota	1,481	10.5	9.5	0.0	18.4	0.7	60.8	79.9
Iowa	5,744	14.5	10.4	0.0	1.1	0.9	73.3	75.3
Washington	8,427	3.1	17.9	9.7	59.7	0.4	7.9	68.0
Idaho	1,317	0.0	35.1	0.0	41.4	4.3	16.2	61.9
Oregon	4,786	0.0	37.9	0.0	47.2	2.3	10.9	60.4
New Mexico	2,366	0.0	46.5	0.0	0.0	10.1	45.2	55.3
Maine	1,047	0.3	32.5	0.0	22.8	7.4	24.5	54.7
Kansas	4,751	24.0	6.8	18.6	0.0	0.3	50.2	50.5
Oklahoma	6,275	7.1	43.7	0.0	2.1	0.5	46.8	49.4
Montana	2,375	44.8	3.7	0.0	27.4	0.8	20.7	48.9
California	16,262	0.1	53.6	6.6	9.0	27.8	6.3	43.1
North Dakota	3,702	53.0	4.2	0.0	3.1	0.0	39.5	42.6
Colorado	4,649	33.1	30.5	0.0	1.6	8.2	28.8	38.6
Minnesota	4,549	28.2	22.0	10.4	1.4	3.1	32.4	36.9
Nebraska	3,298	43.3	3.4	17.4	2.1	0.2	33.3	35.6
New York	10,732	0.0	48.1	22.2	21.4	3.4	4.9	29.7
Massachusetts	1,456	0.0	75.8	0.0	4.7	21.9	1.2	27.8
Texas	39,124	14.1	50.1	8.3	0.1	5.0	22.5	27.6
Nevada	3,020	7.2	56.6	0.0	2.7	23.9	0.7	27.3
Wyoming	3,840	66.8	5.4	0.0	1.2	0.3	25.1	26.6
Hawaii	804	0.0	0.0	0.0	0.0	18.4	6.8	25.2

Note: the [list above is from the site Choose Energy](#). They point out that their list did *not* include a few other sources of energy, including petroleum, geothermal, and biomass, since those numbers are fairly small. While that is in general true – each of these represents around 1% or less of total electricity generation nationwide - there are some significant state exceptions, as will be addressed later. (There are

¹ Note that while Texas does not fall into the top 10 states in terms of the *percentage* of power generated from renewable sources, it is the number 1 state by a wide margin in terms of the total amount of power generated from these sources.

also some inconsistencies in the numbers presented here and the numbers do not quite match the numbers from other sources, but they are close enough to address the theme of this article).

Before discussing why Red states appear at least as open to renewable energy as Blue states let's take a deeper dive into the numbers.

Of the renewable energy sources shown above, Hydropower has been around by far the longest, with the more recent additions to renewables being Wind and Solar.



Hydropower Facility. Source: Smart Water

A look at the top 10 states for Wind and Solar *only* shows the following:

State	% from solar	% from wind	% Wind & Solar
Iowa	0.9	73.3	74.2
South Dakota	0.7	60.8	61.5
New Mexico	10.1	45.2	55.3
Kansas	0.3	50.2	50.5
Oklahoma	0.5	46.8	47.3
North Dakota	0.0	39.5	39.5
Colorado	8.2	28.8	37.0
Minnesota	3.1	32.4	35.5
Vermont	13.3	21.1	34.4
California	27.8	6.3	34.1

Note that the top 6 on this list are, in fact, all Red - or Gray - states.



Source: Wikipedia



Source: YSG Solar

Why Do Red States Appear to be Moving Faster Towards Generating Electricity From Renewable Energy?

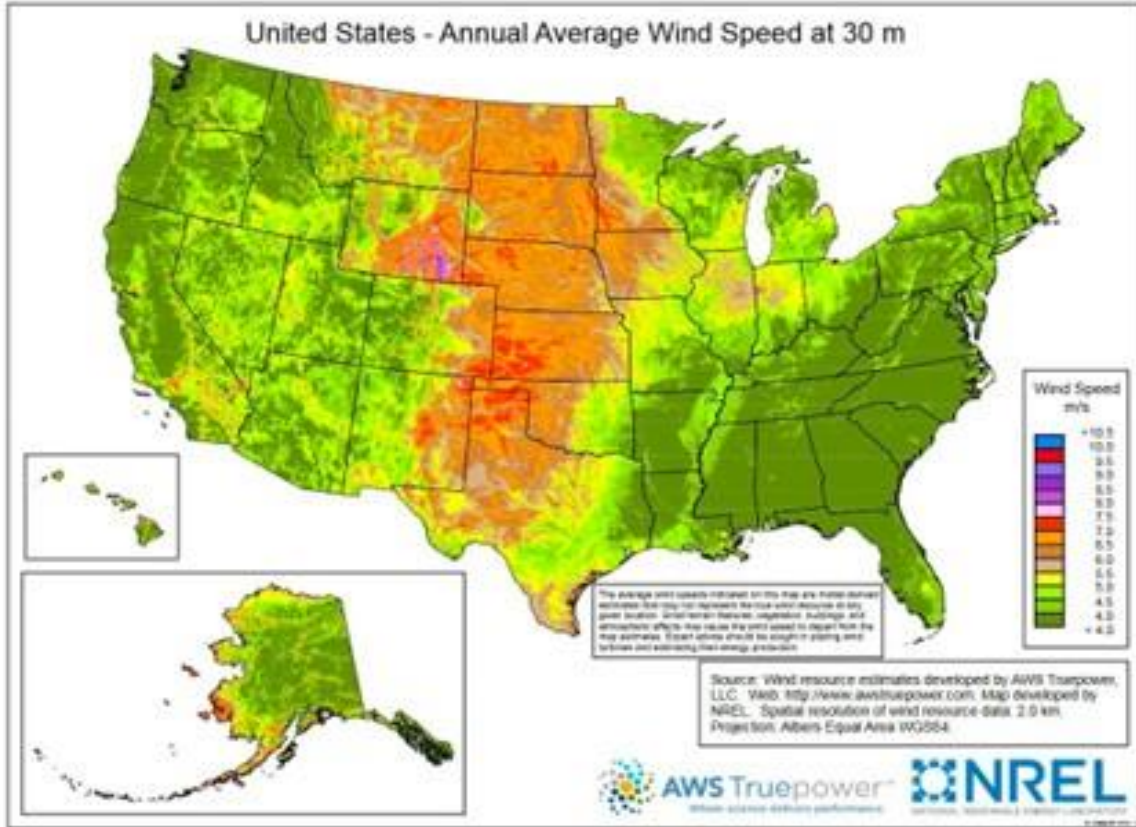
The first thing to notice is that the Red states are moving towards Wind energy, not Solar energy. In fact, none of the Red states on this list are generating as much as 1% from Solar. (As noted earlier, New Mexico is actually a Gray state). The reason for this is that many Red states lie in the USA's 'wind belt' – the region with the highest wind speeds, which is an excellent area for wind farms. The amount of wind energy that can be produced makes wind much less expensive as a source of power generation. It also generates strong returns for landowners of the properties where the wind farms are located. This suggests that Red states in these areas do not need to move to renewable energy as a means to fight climate change but as a way to simply reduce the cost of electricity².

Below is a map produced by the National Renewable Energy Labs (NREL) which shows average wind speeds across the US. As you can see, the areas with the highest wind speeds tend to be home to a lot of Red states – and the map correlates well with the earlier table that showed the states with the most significant amounts of wind power.

The issue of Red states moving more quickly towards renewable energy was the basis for a March 2023 article in the Boston Globe entitled [Red States are Leading on Renewable Energy, While Mass. Ranks 29th, New Analysis Shows](#). The article cited a study from Climate Central that led to this conclusion. The study looked only at the amount of renewable energy each state produced, not the percentage of

² A 2020 study on why Democrats and Republicans support renewable energy reported in Science Direct also noted that Republicans are supportive of renewable energy as a means to “increase America’s energy independence”.

energy derived from renewables, so large states like Texas ranked very high on the list. But the bottom line is essentially the same.



The Globe article included this beautiful photo of a Wind farm in Texas – which was attributed to the Associated Press.



Biomass as an Additional Renewable Source of Electricity Generation

While, as noted earlier, Biomass is responsible for no more than 1% of total electricity generation in the US, there are several states that are much more reliant on biomass – mostly from wood and wood processing waste. The 2 largest by far are Maine and Vermont, each of which generates *over 20% of their electricity use* from renewable biomass.

That would put Vermont – already the number 1 state in terms of renewable energy as a source of electricity generation - at over 100% based on the numbers in the first table above. As noted earlier, there are some inconsistencies in that table, but the bottom line is that Vermont – a Blue state - generates virtually all of its electricity from renewable sources. ([A report from the Nuclear Energy Institute \(NEI\)](#) showed VT as being virtually all renewable back in 2021).

Including Biomass moves Maine up to the number 3 or 4 slot on the above list of the top 10 states leveraging renewable energy for power generation – which does not meaningfully change the mix of Red and Blue states on the top 10 list.

The only other states with meaningful electricity generation from Biomass are New Hampshire, with about 6%, and California, Virginia, and Georgia, each with about 4%. Of these, only California was on the list of states with more than 25% of electricity generation coming from renewables, and the amounts in the other states mentioned here are not enough to get them on the list.



MacNeil Biomass Power Plant - Burlington, VT

Bottom Line

Clearly, renewable energy as a source of power generation is growing across the entire country. – and as the cost of wind and solar continue to decrease we can expect the growth to accelerate. Wind power is growing particularly in the states with high wind speeds, and we are beginning to see offshore wind being implemented on both coasts. Solar is also growing across major portions of the country (although we are seeing a decrease in the amount of new residential solar in the state with the by far the most – California- because of new regulations regarding how consumers are reimbursed for selling solar back into the grid. But that’s another discussion).

In fact, there is enough renewable energy generation and storage projects in the planning stage to totally replace fossil fuels as a source of power generation. That won’t happen anytime soon though because of the need to expand the grid to support those resources – as well as the time it takes to get such projects approved.

But it is encouraging to see that renewable energy is expanding across the country as a whole. It is a slow process, but the energy transition is underway.